Guide to Radio Communications Standards
for DEM Emergency Responders

Communications among DEM Emergency Responders vary with the severity of the incident at hand. They range from simple and straightforward to intense and complex. Flexible standards have been established to guide radio communications accordingly. At one extreme (e.g., in an exchange between regular workmates about a minor incident) the protocol may be nearly (but not quite) as informal as in ordinary conversation. At the other extreme (e.g., among teams from several agencies responding to a major incident) the protocol may be nearly (but not quite) as formal as in a military operation. (See, for example, the Combined Communications-Electronics Board, *Allied Communications Publication 125F*, 5 September 2001, <http://www.dtic.mil/jcs/j6/cceb/acps/acp125f.pdf>). The following, adapted from *ACP-125F*, is intended to guide on-air communications as circumstances require.

GENERAL PROCEDURE
- Maintain constant radio watch unless specific instruction or permission has been received to the contrary. Ensure that the correct frequency is in use and that at least one person is assigned to monitor the radio, regardless of the circumstances. Radio procedures presume that stations can respond to a call.
- Answer all calls as promptly as possible.

- Listen carefully before transmitting to ensure that the frequency is clear and to accommodate troubled stations.
- Use correct speech technique (described below).
- Initiate radio contact by identifying the callsigns of the person you aim to reach and yourself.
- Release the pressel (PTT/push-to-talk switch) promptly and ensure that the radio returns to the receive condition.
- Keep messages clear, orderly, and concise, brief and to-the-point. Do not lose your temper or use profanity.
- Use callsigns and recognizable abbreviations or codes when referring to personnel or locations.
- Clearly state your intention and the information you wish to convey. Insofar as possible, plan the message ahead. Written notes reduce the risk of error.
- Use the primary channel only for urgent substantive communication or to establish contact before shifting to a secondary channel. Keep primary channels as free as possible.
- Standard procedure words (prowords) may be used in place of whole sentences. Prowords are easily used and recognized words or phrases with a specific predetermined meaning. (See appended glossary of common prowords)
  For example:
    ROGER = "I have received your last transmission satisfactorily."
    OUT = "This is the end of my transmission to you, and no answer is required or expected"
- End each transmission by saying the proword "OVER," and end radio contact by saying the proword "OUT."

SPEECH TECHNIQUE

Use of Audio Equipment.
- o In transmission, position the microphone as close to the mouth as possible.
- o For reception, particularly in noisy or difficult conditions, the use of headsets is preferable to loudspeakers.

Method of Speech.
The key words to remember are Rhythm, Speed, Volume and Pitch (RSVP).
- o Rhythm. Use short sentences divided into sensible phrases (vs. pauses after each and every word) that maintain a natural rhythm. When pausing, release the pressel to minimize transmission time and to permit stations to break in as necessary.
- o Speed. Speak slightly slower than for normal conversation. Slow down by increasing the length of pauses between phrases, especially if a message is to be written down by the recipients or if conditions are difficult. (Altering the gaps between words will create an unnatural, halted rhythm that is difficult to understand.) Never speak faster than the station experiencing the worst reception conditions can be expected to receive.
- o Volume. Speak at a volume as for normal conversation. Shouting causes distortion.

o   Pitch. To improve clarity, pitch the voice slightly higher than for normal conversation.

AIDS TO ACCURACY

RULES FOR SPELLING
o   Use the following International Phonetic Alphabet to spell out words or acronyms that may not transmit clearly.

A — Alpha	N — November
B — Bravo	O — Oscar
C — Charlie	P — Papa
D — Delta	Q — Quebec
E — Echo	R — Romeo
F — Foxtrot	S — Sierra
G — Golf	T — Tango
H — Hotel	U — Uniform
I — India	V — Victor
J — Juliet	W — Whiskey
K — Kilo	X — Xray
L — Lima	Y — Yankee
M — Mike	Z — Zulu

o   Callsigns and coordinates should always be spelled out phonetically.
o   Spelling out may also be necessary to communicate obscure or unpronounceable words or abbreviations. They may be spelled out after the proword, "I SPELL." If the word is pronounceable, say it before and after spelling it out. In difficult conditions it may more effective to use full words than to risk having to spell out an abbreviation.

RULES FOR FIGURES
o   Begin radio contact by saying callsigns digit-by-digit.
o   Figures in the text of a message may be spoken as in normal speech, but when conditions are difficult or when misunderstanding is likely or dangerous, figures should be spoken digit-by-digit, preceded by the proword "FIGURES." This proword warns that figures follow immediately, to help distinguish them from other similarly pronounced words.

RADIO CHECKS, SIGNAL STRENGTH AND READABILITY
Whenever using a radio for the first time or when there is doubt about its performance, the simplest check that can be done is what is known as a "radio check." Radio checks should be carried out periodically during periods of low traffic.

INITIATING A RADIO CHECK
The person initiating a radio check should say:
• The callsign of the station being called.

- The words "THIS IS."
- The callsign of the station calling.
- The prowords "RADIO CHECK" (meaning, "What is my signal strength and readability? How do you hear me?")

SIGNAL REPORTING

The responder should answer:
- "ROGER" (meaning "I have received your last transmission satisfactorily.") Strength of signals and readability need not be exchanged unless one station cannot clearly hear another. So, the omission of comment on signal strength and readability is understood to mean that reception is LOUD and CLEAR.
- If reception is other than loud and clear, it must be described with prowords for signal strength and readability, such as:

Signal Strength	
LOUD	Your signal is strong.
GOOD	Your signal is plainly audible.
WEAK	I can hear you, but with difficulty.
FADING	At times your signal fades so much that continuous reception is not dependable.
NOTHING HEARD	I cannot hear you at all.

Readability	
CLEAR	Excellent quality.
READABLE	Good quality; no difficulty in reading you.
DISTORTED	Having problems reading you due to distortion.
WITH INTERFERENCE	Having trouble reading you due to interference.
INTERMITTENT	Having trouble reading you because your signal is intermittent.
NOT READABLE	I can hear that you are transmitting but cannot read you at all.

TRANSMITTING A MESSAGE
- When communication reception is satisfactory, message parts may be transmitted only once.
- When communication is difficult, callsigns should be transmitted twice. (Phrases, words, or groups may be transmitted twice after use of the proword WORDS TWICE. Reception may be verified by use of the proword READ BACK.)

RELAY
- The proword RELAY used alone indicates that the station called is to redirect the message to all addressees.

- The proword RELAY TO followed by an address designator indicates that the station called is to relay the message to the stations indicated. When more than one station is called, the callsign of the station designated to perform the relay will precede the proword RELAY TO.
- The proword RELAY THROUGH allows a station to indicate a third station that can relay a message.
- The proword THROUGH ME allows a third station to indicate that it is in contact with the required station and able to relay the message.
- In all cases – whether the originating station can or cannot hear the relaying station – the relaying station must inform the originating station if it has not been able to relay the message.

REPETITIONS
- Before receipting a message that is unclear, stations should request repetitions. For this purpose, the proword SAY AGAIN may be used alone or in conjunction with prowords that identify the portion of the message that is unclear (e.g., ALL BEFORE, ALL AFTER, FROM, TO, WORD BEFORE, WORD AFTER). In complying with requests for repetitions, the transmitting station must identify the portion that is being repeated.
- When it is necessary to ask for repetitions after a message has been receipted, identify the message being queried as well as the portion required.

CORRECTIONS
- When an operator makes an error while transmitting a message, he/should should use the proword CORRECTION, followed by the last word or phrase correctly transmitted. Then continue transmission.
- If an operator discovers an error in a message after it has been receipted, he/she should send an abbreviated service message, identifying the message and the portion to be corrected.

CANCELING MESSAGES
- During the transmission of a message (anytime up to the ending proword OVER or OUT), the message may be cancelled by use of the prowords: DISREGARD THIS TRANSMISSION – OUT.
- A message that has been completely transmitted can only be cancelled by another message.

DO NOT ANSWER TRANSMISSIONS
- When it is imperative that the called stations do not answer a transmission, the proword DO NOT ANSWER will be transmitted immediately following the call, and the complete transmission will be sent twice, the full transmission ending with the proword OUT.
- DO NOT ANSWER transmissions must be authenticated.

READ BACK
- To ensure that a message has been accurately received, the originating station may request that all or part of the message be read back, using the proword READ BACK and identifying the segment (e.g., READ BACK TIME, READ BACK GRID, READ BACK TEXT, etc.)

- Specify which stations are to read back by saying their call numbers before the proword READ BACK. Remaining stations should keep silent. When callsigns do not precede the proword READ BACK, all recipients are to read back.
- If the station reading back does so incorrectly, the originating station will call attention to the error by using the proword WRONG, followed by the correct version.

RECEIPT
- Receipt indicates a message has been delivered. A receipt may be effected as follows:
  - In abbreviated procedures, if no confusion is likely to arise, a return transmission may be considered a receipt.
  - After each message or string of messages, the receiving station transmits proword ROGER.
  - In the case of a message requiring acknowledgment, the use of the proword WILCO constitutes a receipt. (The meaning of WILCO includes that of ROGER.)
- To increase the speed of handling collective calls, one (and only one) station in the net may be directed to receipt for the message. Other stations may still request repetition.
- Either the originating or receiving station may indicate a wish to add another transmission with the proword MORE TO FOLLOW in the message ending or receipt.

ACKNOWLEDGMENT OF MESSAGES
- It is the prerogative of the originator to request an ACKNOWLEDGMENT to a message from any or all addressees of that message. (An acknowledgment should not be confused with a reply or receipt.)
- The request for acknowledgment of a message normally is included in the text of that message.
- If the message has been transmitted, the request for acknowledgment will constitute a new message.
- Acknowledgments are originated only by the addressee to whom the request for acknowledgment was made.
- A prompt reply referring to the message may serve in lieu of an acknowledgment.

VERIFICATIONS
- When requested by an addressee, the originating station will verify with the originator and send the correct version.
- When a message to a number of addressees is queried by one station and found to be incorrect, the corrected version must be sent to all addressees.

BREAK-IN PROCEDURE
- A station having a message of higher precedence than the transmission in progress may break in and thus suspend that transmission in the following manner:
  - FLASH – Break in at once and transmit the message (b and c below).
  - IMMEDIATE – May break in at once and pass the message. If necessary, a preliminary call may be made before transmitting the message.

- o PRIORITY – As for IMMEDIATE except that only long ROUTINE messages should be interrupted.
- When spoken three times, these prowords, means, "Cease transmissions immediately. Silence will be maintained until the station breaking in has passed the message."

APPENDIX: COMMON PROWORDS (STANDARD PROCEDURE WORDS)

Proword	Meaning
ACKNOWLEDGE	Confirm that you have received my message and will comply (WILCO).
AFFIRMATIVE	Yes/Correct.
NEGATIVE	No/Incorrect.
ALL AFTER . . .	Everything that you (I) transmitted after . . .
ALL BEFORE . . .	Everything that you (I) transmitted before . . .
BREAK – BREAK – BREAK!	All stations will immediately cease transmission. The station breaking in has an urgent message. (*Used only in extreme emergency.*)
CORRECT	You are correct.
CORRECTION	The correct version is . . .
WRONG	Your last transmission was incorrect; the correct version is . . .
DISREGARD THIS TRANSMISSION – OUT	This transmission is an error; disregard it.
DO NOT ANSWER – OUT	Station(s) called are not to answer this call, acknowledge this message, or transmit in connection with this transmission.
FIGURES	Numbers follow (in this message).
MESSAGE.	I have an informal message for you.
MESSAGE FOLLOWS	I have a formal message which should be recorded (e.g. written down).
OVER	I have finished my turn. I await a response.
OUT	Go ahead, transmit. I have finished my transmission.
OUT TO YOU	I have nothing more for you. No reply is expected. Do not reply. I will now call another station on the net. (*Note: OVER and OUT are never used together.*)
READ BACK	Read back the following message to me exactly as received.
I READ BACK	The following is my reply to your request to read back.
RELAY TO . . .	Transmit the following message to all addressees or to the address immediately following.
RELAY THROUGH . . .	Send this message by way of callsign _____ to ____.
ROGER	I have received your last transmission satisfactorily.
ROGER SO FAR?	Have you received this part of my message satisfactorily?

SAY AGAIN	Repeat all of your last transmission.
SAY AGAIN ALL (WORD) AFTER (BEFORE)	Repeat portion of message indicated.
I SAY AGAIN	I am repeating my transmission or portion indicated.
SEND	Go ahead with your transmission.
SEND YOUR MESSAGE	Go ahead; I am ready to copy.
SILENCE – SILENCE – SILENCE!	Cease all transmission immediately and maintain until lifted. (*Used by Communications Officer or Network Operator.*)
SILENCE LIFTED	Silence is lifted. Net is free for traffic.
SPEAK SLOWER/FASTER	Adjust the speed of your transmission.
I SPELL	I shall spell the next word phonetically
THROUGH ME	I am in contact with the station you are calling. I can act as a relay station.
MESSAGE PASSED TO . . .	Your message has been passed to . . .
UNKNOWN STATION	The identity of the station calling or with whom I am attempting to establish communication is unknown.
VERIFY	Verify entire message (or portion indicated) with the originator and send correct version. (*Used only at discretion of or by the addressee to which the questioned message was sent.*)
I VERIFY	That which follows has been verified at your request and is repeated. (*Used only as a reply to VERIFY*).
WAIT (OR WAIT – WAIT)	I must pause for a few seconds.
WAIT OUT	I must pause longer than some seconds and will call you again when ready.
WILCO	I have received and understood your message and will comply. (*Used only by the addressee.*)
WORD AFTER . . .	The word of the message to which I refer is the following . . .
WORLD BEFORE . . .	The word of the message to which I refer was the preceding . . .
WORDS TWICE	Communication is difficult, so transmit ("ting") each phrase twice (*Used as an order, request, or information.*)